

LISTING OF CLAIMS:

1. (Original) A process for converting carbonaceous material into a product gas comprising:

drying a carbonaceous fluid to form a carbonaceous material having a solids content of at least 80%;

indirectly heating a fluidized bed, the fluidized bed containing particles suspended in a fluid medium;

injecting the dried carbonaceous material into the fluidized bed; and

endothermically converting at least a portion of the carbonaceous material into a product gas stream.

2. (Original) A process as defined in claim 1, wherein the dried carbonaceous material has a solids content of at least about 90%.

3. (Original) A process as defined in claim 1, wherein the dried carbonaceous material has a solids content of at least about 95%.

4. (Original) A process as defined in claim 1, wherein the carbonaceous fluid comprises black liquor.

5. (Original) A process as defined in claim 1, wherein the fluidized bed is indirectly heated by at least one pulse combustion device, the pulse combustion device creating a pulsating combustion stream and an acoustic pressure wave that are transmitted through at least one resonance tube inserted into the fluidized bed.

6. (Original) A process as defined in claim 1, wherein the fluidized bed is maintained at a temperature of from about 1100 degrees F to about 1300 degrees F.

7. (Original) A process as defined in claim 1, wherein the fluidized bed is maintained at a temperature of less than about 1150 degrees F.

8. (Original) A process as defined in claim 1, wherein the fluidized bed is at a temperature and the dried carbonaceous material has an average particle size, a particle size distribution and a solids concentration such that the carbonaceous material forms a molten layer on the fluidized bed particles prior to being converted into a gas.

9. (Original) A process as defined in claim 1, wherein the carbonaceous material is injected into the fluidized bed in a carrier gas.

10. (Original) A process as defined in claim 9, wherein the carrier gas comprises steam.

11. (Original) A process as defined in claim 9, wherein the carrier gas comprises at least a portion of the product gas stream.

12. (Original) A process as defined in claim 1, wherein the carbonaceous material is injected into the fluidized bed so as to have an average particle size of from about 45 microns to about 120 microns.

13. (Original) A process as defined in claim 4, wherein the fluidized bed particles comprise sodium carbonate.

14. (Original) A process as defined in claim 1, wherein the product gas is filtered to remove entrained solids.

15. (Original) A process as defined in claim 1, wherein the product gas is fed through a scrubbing device for removing sulfur compounds contained within the gas.

16. (Original) A process as defined in claim 1, wherein the carbonaceous material is dried in a second fluidized bed.

17. (Original) A process as defined in claim 16, wherein the carbonaceous material is fed to an evaporator prior to entering the second fluidized bed.

18. (Original) A process as defined in claim 1, wherein the carbonaceous material is endothermically converted in the fluidized bed in a manner such that substantially no slag is formed.

19. (Original) A process for producing a product gas having heat or fuel value comprising:

feeding a carbonaceous material to a first fluidized bed, the first fluidized bed containing particles suspended in a fluid medium;

indirectly heating the first fluidized bed with a combustion device, the first fluidized bed being heated to a temperature of less than about 1200 degrees F, at least a portion of the carbonaceous material being gasified to form a first product gas stream;

extracting bed solids containing carbon from the first fluidized bed and feeding the extracted solids to a second fluidized bed, the second fluidized bed being at a temperature higher than the temperature of the first fluidized bed, the second fluidized bed having a fluidizing medium comprising steam and an oxygen-containing gas, wherein at

least a portion of the carbon contained in the extracted bed solids is gasified to form a second product gas stream.

20. (Original) A process as defined in claim 19, wherein the first fluidized bed is maintained at a temperature of less than about 1150 degrees F.

21. (Original) A process as defined in claim 19, wherein the carbonaceous material comprises black liquor.

22. (Original) A process as defined in claim 19, wherein the first product gas stream is fed to a filtering device for filtering solids entrained in the product gas stream, the filtered solids being recirculated back to the first fluidized bed.

23. (Original) A process as defined in claim 19, wherein the fluidizing medium fed to the second fluidized bed contains oxygen in a stoichiometric amount of less than about 50% based on the amount of carbon in the bed.

24. (Original) A process as defined in claim 19, wherein a portion of the carbon contained in the extracted bed solids is oxidized in the second fluidized bed, while another portion of the solids contained in the extracted bed solids is endothermically converted to a gas in the second fluidized bed.

25. (Original) A process as defined in claim 19, wherein the portion of the carbonaceous material gasified in the first fluidized bed is endothermically converted to a gas.

26. (Original) A process as defined in claim 19, wherein the fluidized bed particles contained in the first fluidized bed and the second fluidized bed comprise sodium carbonate.

27. (Original) A process as defined in claim 19, wherein the second fluidized bed is heated by oxidizing carbon in the bed.

28. (Original) A process as defined in claim 19, wherein the second product gas stream is filtered in order to remove entrained solids.

29. (Original) A process as defined in claim 19, wherein bed solids are periodically extracted from the second fluidized bed.

30. (Original) A process as defined in claim 29, wherein the recirculated bed solids are mixed with the carbonaceous material being injected into the first fluidized bed.

31. (Original) A process as defined in claim 19, wherein the first product gas stream is combined with the second product gas stream.

32. (Original) A process as defined in claim 19, wherein the combustion device that indirectly heats the first fluidized bed comprises a pulse combustion device.

33. (Original) A process for producing a product gas having heat or fuel value comprising:

feeding a carbonaceous material to a fluidized bed, the fluidized bed containing particles suspended in a fluid medium, the fluidized bed including a top portion and a bottom portion, the bottom portion being in communication with a solids collection reservoir;

indirectly heating the fluidized bed with a combustion device, the fluidized bed being heated to a temperature of less than about 1200 degrees F, a portion of the carbonaceous material fed to the fluidized bed being gasified to form a product gas stream; and

feeding a gaseous medium through the solids collection reservoir, the gaseous medium comprising an oxygen-containing gas, the gaseous medium gasifying carbon particles that have accumulated in the bottom portion of the fluidized bed.

34. (Original) A process as defined in claim 33, wherein the fluid medium in the fluidized bed comprises steam.

35. (Original) A process as defined in claim 33, wherein the fluidized bed is heated to a temperature of less than about 1150 degrees F.

36. (Original) A process as defined in claim 33, wherein the fluidized bed is heated to a temperature of less than about 1100 degrees F.

37. (Original) A process as defined in claim 33, wherein the product gas stream is fed to a filtering device for filtering solids entrained in the product gas stream, the filtered solids being recirculated back to the fluidized bed.

38. (Original) A process as defined in claim 33, wherein the gaseous medium fed through the solids collection reservoir contains oxygen in a stoichiometric amount less than about 50%.

39. (Original) A process as defined in claim 33, wherein a portion of the carbon particles contained in the solids collection reservoir are oxidized and wherein another

portion of the carbon particles contained within the solids collection reservoir are endothermically converted to a gas.

40. (Original) A process as defined in claim 33, wherein the solids collection reservoir is maintained at a higher temperature than the fluidized bed.

41. (Original) A process as defined in claim 33, wherein the carbonaceous material comprises a black liquor.

42. (Original) A process as defined in claim 34, wherein at least a portion of the carbonaceous material fed to the fluidized bed is steam reformed to form the product gas stream.

43. (Original) A process as defined in claim 41, wherein the particles suspended in the fluidized bed comprise sodium carbonate.

44. (Original) A process as defined in claim 33, wherein the combustion device that indirectly heats the fluidized bed comprises a pulse combustion device.

45. (Original) A process as defined in claim 33, wherein the particles suspended in the fluidized bed comprise sodium carbonate and the fluidizing medium comprises steam, the carbonaceous material being fed to the fluidized bed comprising black liquor, a majority of the black liquor being steam reformed in the fluidized bed, and wherein a portion of the carbon particles that have accumulated in the bottom portion of the fluidized bed are oxidized, while another portion of the carbon particles are steam reformed.

46. – 93. Canceled.